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| Supplementary Figure 1 | Defined developmental cues induce the rapid differentiation of pluripotent epiblast stem cells into oligodendrocytes.                                                                                                                                                                                                                          |
| Supplementary Figure 2 | Efficient transition of EpiSCs to neural rosettes.                                                                                                                                                                                                                                                                                             |
| Supplementary Figure 3 | Region-specific patterning of EpiSC-derived neural rosettes.                                                                                                                                                                                                                                                                                   |
| Supplementary Figure 4 | Patterned rosettes first produce neurons.                                                                                                                                                                                                                                                                                                      |
| Supplementary Figure 5 | Differentiation of EpiSCs into oligodendrocytes is robust across many independent cell lines.                                                                                                                                                                                                                                                  |
| Supplementary Figure 6 | Highly expanded EpiSC-derived OPCs maintain the capacity to differentiate.                                                                                                                                                                                                                                                                     |
| Supplementary Figure 7 | Transplanted EpiSC-derived OPCs do not form neurons.                                                                                                                                                                                                                                                                                           |
| Supplementary Figure 8 | Pluripotent stem cell differentiation provides a tractable platform for oligodendrocyte biology and medicine.                                                                                                                                                                                                                                  |
| Supplementary Table 1  | Cell type specific gene lists for EpiSCs, rosettes, OPCs, and oligodendrocytes.                                                                                                                                                                                                                                                                |
| Supplementary Table 2  | PCR primer sequences.                                                                                                                                                                                                                                                                                                                          |
| Supplementary Video 1  | Time-lapse imaging of EpiSC-derived OPCs differentiated to oligodendrocytes. Images were collected every 10 minutes for 68 hours on an inverted microscope outfitted with a precision scanning stage within a live cell incubation chamber and cover at 37°C and 5% CO <sub>2</sub> in medium containing T3, SHH, Noggin, cAMP, IGF1, and NT3. |